

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A hybrid ferromagnet/ semiconductor spin device comprising:
a semiconductor substrate;
a source region formed on the substrate as a ferromagnet;
a spin channel region on the substrate, where a spin-polarized carrier at the source region is injected and transported; and

a drain region formed on the substrate as a ferromagnet, for detecting a spin which has passed through the spin channel region.

wherein the ferromagnet is one selected from GaMnAs, InMnAs, GeMn, and GaMnN.

2. (Currently Amended) The hybrid ferromagnet/ semiconductor spin device of claim 1, wherein the ferromagnet is a magnet metal having a great spin polarization, ~~and is one selected from Fe, Co, Ni, FeCo, and NiFe.~~

3. (Canceled)

4. (Currently Amended) The hybrid ferromagnet/ semiconductor spin device of claim 1, wherein the ferromagnet is a half metal having a spin polarization of 100%, ~~such as CrO₂.~~

5. (Original) The hybrid ferromagnet/ semiconductor spin device of claim 1, wherein the semiconductor is one selected from Si, GaAs, InAs, and Ge.

6. (Original) The hybrid ferromagnet/ semiconductor spin device of claim 1, wherein the spin channel region is Si on insulator (SOI) or two dimensional electron gas of a compound semiconductor.

7. (Original) The hybrid ferromagnet/ semiconductor spin device of claim 1, wherein the source region and the drain region have a line width of a range of 5-1000nm.

8. (Original) The hybrid ferromagnet/ semiconductor spin device of claim 7, wherein an interval between the source region and the drain region is in a range of 10nm -1 μ m.

9. (Original) The hybrid ferromagnet/ semiconductor spin device of claim 7, wherein the source region and the drain region have a different line width each other so that a spin switching is anti-parallel in a certain magnet field range.

10. (Currently Amended) A hybrid ferromagnet/ semiconductor spin device comprising:
a semiconductor substrate;
a source region formed on the substrate as a ferromagnet;
a spin channel region on the substrate, where a spin-polarized carrier at the source region is injected and transported; and
a drain region formed on the substrate as a ferromagnet, for detecting a spin which has passed through the spin channel region; ~~and The hybrid ferromagnet/ semiconductor spin device of claim 1,~~

wherein a surface of the semiconductor substrate where the source region and the drain region are formed is etched with a depth of a range of 10-500nm.

11. (Original) The hybrid ferromagnet/ semiconductor spin device of claim 1, wherein a contact resistance between the ferromagnet and the semiconductor is Ohmic or Schottky.

12. (Canceled)

13. (Currently Amended) A spin-polarized field effect transistor comprising a gate, an insulating layer formed under the gate, a source region and a drain region formed at left and right sides of the insulating layer by using a ferromagnet, and two dimensional electron gas below the insulating layer, wherein a precession of a spin-polarized carrier is controlled by a voltage applied to the gate. The hybrid ferromagnet/semiconductor spin device of claim 1, wherein the ferromagnet is one selected from GaMnAs, InMnAs, GeMn, and GaMnN.

14. (Canceled)

15. (Canceled)